

DEVELOPING A STRATEGY TO ENACT LEAN

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ABSTRACT

The purpose of this paper is to explain how the case study company developed a strategy to implement lean across the business, and to reflect on the success of this approach so other companies may consider this learning and how it might be useful to them.

The case study company developed a strategy to create a number of standard tools/ways of working. These tools can be considered to be standardised work for key aspects of the construction process that the company undertakes. The aim of the tools was to ensure that critical tasks would be carried out to the correct standard (quality, time, cost, health & safety) every time, across the business. Achievement of this is expected to lead to improved performance and elimination of variation (waste.)

The paper will firstly explain, with reference to the relevant literature, how and why the researcher developed a strategy to engage people from within the business in the development of the tools. Working with numerous groups within the business, the researcher then put this strategy into action, with the outcome being the completed tools.

The findings of the paper show that whilst the completed tools delivered business benefits, the development of the tools did not follow the planned strategy. The paper discusses how the strategy had to be continuously adapted to cope with the current business environment and path dependencies, evidencing that lean implementations need to be tailored to suit the needs of the individual firm, rather than there being a one size fits all solution.

Further, the conclusions will be set in the context of what lean has become to mean to the case study organisation, and how this sits in the wider debate of whether lean is an all encompassing philosophy or a set of prescriptive tools and techniques.

KEY WORDS

lean, standardised work, waste, strategy, change

INTRODUCTION

The case study company is a UK main contractor with an annual turnover of ~£250m, whose projects include schools and colleges, student accommodation, hospitals and laboratories, mainly won through competitive tendering and some PFI. The average project value is £21m, with over 85% of the cost of each project being outsourced to sub-contractors who are chosen and vetted as part of the Company's supply chain.

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The Company is currently implementing a change programme based on embedding lean principles such that it can continually improve and meet business targets. This change programme is central to the Company's strategy.

A recent stage of this change programme was to develop and implement a number of tools/ways of working that could be standardised across the business to ensure that critical tasks are carried out consistently to the correct standard, thereby ensuring risks are mitigated and projects are delivered as planned, achieving the planned profit target.

THE COMPANY BUSINESS CASE

At any one time, the case study company will have approximately 20 ongoing projects being delivered by project teams across its three operating divisions. Whilst some projects were able to deliver results in terms of on time delivery, cost and quality, other projects failed to do this and were considered to be "bad jobs," i.e. completed late and made a loss. This level of inconsistency in delivery of projects on time, within budget and to the required quality has led not only to individual project losses, but sometimes to an overall business loss. In this sense, the business had established a sense of urgency to change, the first of the eight stages in Kotter's process for creating major change (Kotter, 1996.)

During this time the business was delivering an in-house developed and delivered project management training programme to its senior managers (project leaders, contracts managers) and front line managers (deputy build managers, gang supervisors.) The development of the training material for these courses highlighted a lack of documented, defined ways of working; ways of working had to be hastily written in order for the training course material to be completed, rather than the training course material being based around existing company standards and processes. In addition, delivery of the training courses highlighted the fact that different divisions of the business, and even different project teams within divisions, were developing their own ways of working, in some cases creating new processes and templates at the start of each project.

In response to the inconsistent performance and the learning from the training programmes, the business carried out an analysis of post project review findings. Rather than poor project performance being found to be due to complex situations, it was a lack of application of the basics of project management that were found to be the causes, for example:

- Poor handover of information from the tender team to project team
- Inadequate design management

Variation in ways of working was clearly leading to inconsistency in project performance, with different project teams defining and re-defining how they worked; a business waste in itself. These findings prompted two main requirements; the need to reinforce these basics across the business, and the need to clearly define a benchmark of what "good" looked like so it could then be communicated and embedded across the business.

The business therefore decided to develop a number of "tools" that would become the standard way project teams would carry out certain critical project management tasks. Examples of these tools include standard meeting agendas for project launch

and weekly planning meetings, as well as standard templates for information release schedules and procurement schedules. These internal working practices would provide a consistent framework for project teams, despite any project specificities. The prime objective was to ensure that these critical tasks could be carried out to the same standard, every time, by every team, mitigating the risk of finishing late and over budget.

A STRATEGY TO ENACT LEAN – DEVELOP STANDARDISED WORK

The decision to develop a set of tools, and the way these tools were developed, became the strategy by which the business could enact lean principles in practice. The business called this stage of the lean implementation plan the “stabilisation” stage in recognition of that fact that “it is only when the process is stable that you can begin the creative progression of continuous improvement” (Liker & Meier, 2006, p.111.)

Both the tools themselves, and the process by which the tools were developed, were to become vehicles for embedding lean principles and techniques, i.e. strategies to enact lean in practice.

The completed tools can be considered to be a version of standardised work, one of the core lean tools. Standardised work documents the current, best practice for carrying out a particular activity/process. The result is that activities can be carried out consistently, ensuring that the desired results of quality, cost, delivery and health & safety will be achieved every time (Liker, 2004; Liker & Meier, 2006.)

From a Company perspective, this elimination of variation in project performance is a reduction in waste. In addition, creating the standardised work in itself forces wastes in the work methods to be identified and eliminated by those who are carrying out the work. Once defined, this current, best practice would then be the baseline for training and continuous improvement. This approach fits with the Company’s accreditation to the ISO9001 quality management system standard which is based on the Plan Do Check Act approach. (Deming, 1986; British Standards Institution, 2008.)

A STRATEGY TO DEVELOP THE STANDARDISED WORK

The business developed a strategy for how the required tools would be developed. The process had two main objectives:

- Produce the right tools
- Engender employee involvement and empowerment

Concerning the first objective, the “right” tool was defined as:

- A way of working that would enable the correct output(s) to be achieved each time. This would be specific to each individual tool.
- One that was lean, i.e. allowed the task to be carried out efficiently (process waste eliminated.)

The strategy for developing the tools was defined by the Process Improvement Manager so that each member of the Process Improvement team could facilitate the development of tools in the same way to the same standard. The key points of this process and their purpose are discussed in the following sections.

Regarding the objectives of the strategy, there was a conscious effort not just to follow the mentality of trying to implement a particular lean tool, i.e. standardised work, but to set that in the context of the wider aim of becoming a lean organisation where people were involved in the improvement process and had an understanding of what lean was and what it was trying to achieve in wider terms.

The structured process for developing the tools is shown in figure 1.

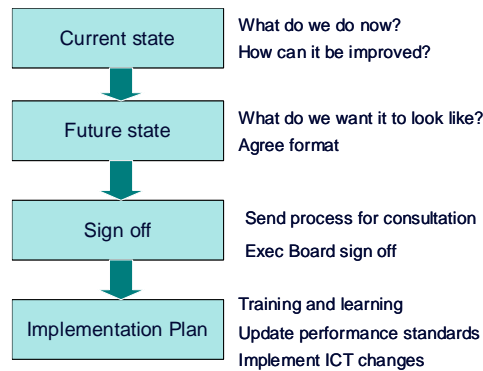


Figure 1: Process Improvement process

Figure 2 shows part of the detailed process map for developing the tools. The square boxes contain process steps, while the document boxes refer to tools that the Process Improvement team used, for example meeting agendas and presentations.

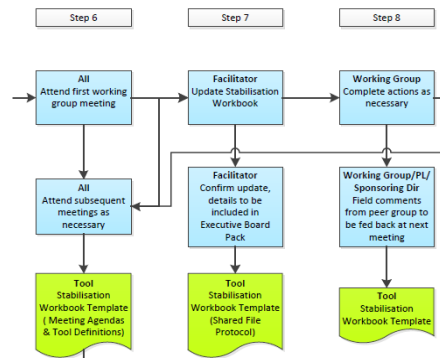


Figure 2: Extract of the strategy for developing the stabilisation tools

EMPLOYEE INVOLVEMENT AND EMPOWERMENT

A common discussion surrounding standardised work is that of whether standardisation actually disengages people and makes their working lives too rigid, stifling creativity. Toyota’s view of standardised work is that “rather than reinforcing rigid standards that can make jobs routine and degrading, standardised work is the basis for empowering workers and innovation in the workplace.” (Liker, 2004, p.142.) Adler (1999) talked about democratic Taylorism in the sense that Toyota was encouraging workers to become the problem solvers and develop their own standardised work, rather than having it imposed on them by someone else. Toyota believes that the key to achieving balance between rigid procedures and freedom to innovate “lies in the way people write standards as well as who contributes to them.” (Liker, 2004, p.147.) Further to this, the way processes are developed, tested, evaluated and documented and communicated appear to be important factors in being

able to effectively transfer knowledge and allow new processes to be learned so that a business can overcome dependencies and change (Teece, et al., 1997; Zollo and Winter, 2002.)

To this end, 12 working groups were set up to develop the tools. These groups consisted of people from a range of relevant disciplines and from across each area of the business. The groups were lead through the process of developing the tools by the Process Improvement team facilitators. This included explaining the strategy in the context of the wider business need. Involving the process experts from across the business would ensure that current, best working practices would be revealed, debated and agreed in the final form of the tool. A second aim was that taking people through a structured process and involving them in the development of the tools would introduce them to a problem solving/improvement mindset that they would be able to take back with them into their day job, hopefully more empowered to effect change. In other words, begin to teach and coach people the improvement process, referred to as the improvement kata and coaching kata. (Rother, 2010; Liker & Rother, 2011.)

SENIOR MANAGER INVOLVEMENT

Senior managers at all levels of the business were involved in the process of developing the tools. Executive Board directors were allocated as “sponsoring directors” for particular working groups. The aim was to ensure that the groups had a figurehead for their work, and to ensure that the directors themselves would engage with the improvement process. Middle managers, such as construction directors, were assigned as “process leaders” of the working groups. It was felt essential to involve these managers, as they would ultimately have to ensure their teams’ compliance in using the completed tools.

A steering group was also set up to oversee the progress of the development of the tools, ensure that the agreed process was being adhered to, and to provide leadership and support through emphasising the importance of the work at every opportunity. The steering group were supposed to be the guiding coalition (Kotter, 1996) who could oversee progress and make decisions and provide leadership for the benefit of the whole business, not just viewing things from a single perspective.

CHECK POINTS

Regular checkpoints were built into the process to ensure the working groups were progressing as planned, and that the tools being developed would be fit for purpose. Check points included reviews of progress with the sponsoring director, progress reviews with the steering group and formal sign off of the tools by the Executive Board before they were released as the standard to the whole Company.

HOW THIS APPROACH WORKED IN PRACTICE

Much effort was put into developing a strategy that would not only produce the right set of tools, but also perhaps more importantly begin to educate and engage people from across the business in the improvement process and lean philosophy. However, implementing the process in practice and attaining the intended outcomes proved to be much more difficult in practice than on paper.

In the main, the Process Improvement team were able to follow the top-level strategy of working with the groups to understand the current tools in use within the

business and develop the future state tools with the teams. However, scheduling the sessions with working group members was a constant challenge due to lack of availability, with most sessions taking place without the full group in attendance. This meant that the Process Improvement team had to do follow-ups with individuals to ensure they were kept appraised and involved, rather than the team being able to work collaboratively.

The strategy employed to develop the tools was aimed at engaging and involving employees, and clear roles and responsibilities for those involved were set out. Individuals within the working groups did engage with the strategy at the facilitated working group sessions and became enthused with developing the tools they had been assigned to work on. Some groups felt particularly empowered by the strategy, and felt barriers between company departments and teams were being broken down as they gained a shared understanding of each other's roles. However, outside of these sessions, individuals seemed to go back to their day jobs, which did not include spreading the message of what they had learned. In the main, the majority of the individuals did not carry out their working group roles as defined, in many instances leaving the Process Improvement facilitators to carry out most of the actions. Arguably one result of this was that the intended ownership of the tools was taken away, with the only resulting gain being completion of the tools within the required timescale. A second consideration is whether individuals had the capabilities to engage fully with the strategy and carry out their roles. Historically within the case study company ways of working were prescribed by functional heads, and individuals were not involved in the development of their tools/processes. Also, whilst project teams overcome problems on a daily basis, getting to the root cause of problems and preventing their reoccurrence is not a common way of thinking. Construction management professionals tend to learn from experience and have a tacit knowledge, which is influenced by organisational culture and their beliefs (Hirota & Formoso, 2001; Carneiro et al., 2009.) Such path dependencies, discussed in a previous paper concerning the same company, were evidenced in how people engaged with this strategy (Morrey, et al, 2010.) It was hoped that engagement of individuals with this strategy would be an introduction to a problem solving/improvement way of thinking, but it is evident that it will take more than one expose to the improvement cycle to overcome the path dependencies and embed the improvement and coaching katas such that they become custom and practice.

Outside of those in the working groups a commonly held view was that standard tools would turn people into robots, with little scope for creativity or innovation. This is a view that is evidenced in a case study of a Japanese automotive transplant to the UK where reality was reported to be reduced worker autonomy rather than empowerment. (Garrahan & Stewart, 1992.) These concerns are counter to the intended strategy that was aimed at involving people in developing their ways of working, providing a mechanism for continuous improvement, but fundamentally to create tools that would allow the creativity to be in the way they used the tools, rather than the tool itself.

In particular the checkpoints that were to be undertaken by the Executive Board directors and steering group were not adhered to. Due to a lack of availability, which could ultimately be said to be a lack of priority, progress reviews with Board directors were rarely undertaken. In order to maintain progress, these checks were effectively

abandoned, with the result being that the tools required more re-working when they were finally reviewed at the end of their development. In addition, the whole Board did not sign off all the tools; the strategy was again amended and final sign off fell to one Board director. This was despite the strategy of developing the tools being part of the Company business plan, bringing into question how that plan had been developed and the level of top management buy in. In addition, it is possible that senior managers were being asked to engage in a strategy that they felt threatened by due to it being new and outside of their experience and knowledge. Whilst needing skills to cope with and lead change is not limited to change based on lean principles, this highlights the need to consider the difference between management and leadership, and the skills needed for both, in a lean organisation. (Bodek, 2008.)

Overall, it could be said that individuals at all levels did not engage as envisaged with the strategy. Although this was identified and highlighted at the time, the designated leadership did not intervene in the intended ways, leaving the Process Improvement team to drive the strategy without the back up of the guiding coalition or Executive Board. When the working groups and roles were set up, the vision was that all parties would be engaged and enthused by the lean agenda, however this assumed that those individuals wanted to be involved and also that they shared the same goals for the organisation. The developer of the strategy, who had learned from lean texts such as the Toyota Way (Liker, 2006), Lean Thinking (Womack & Jones, 2003) had assumed a unitary perspective of the organisation (Fox, 1974; Burrell & Morgan, 1979) i.e. that all parties would want to strive for the common goal and that the strategy was in everyone's interests. In reality, all those asked to engage with the strategy had their own interests, and without clear leadership from senior management as to the importance of this strategy, their day jobs took precedence. The pluralist perspective of the organisation, where individuals and groups have their own interests with only fleeting interest in the goals of the organisation (Morgan, 1997) is one that was evidenced here, and which Green and May argue has been largely ignored in the lean construction debate (Green & May, 2005.)

Another point of contention was sign offs and checkpoints that had been built into the strategy to ensure progress was being made but also to ensure the tools being developed were fit for purpose. Some individuals complained that in the end their opinions would not matter as management would eventually over-rule what they wanted. Arguably the planned strategy developed by the case study company was controlling the level of empowerment and participation. Stuart Green (1999, 2000) suggests that this reinforces the hard human resource management approach that is typical of construction and allows managers to use lean rhetoric as a disguise for further command and control. However, in a pluralist organisation, where individuals only have a passing interest in the goals of the whole organisation, at some point there needs to be some decision making by management. In a pluralist organisation conflict is an accepted characteristic of the organisation and interest groups play for power, with the task of management being to "shape the debate and convince competing parties to follow their chosen course of action." (Green & May, 2005, p.501.) So rather than the unitary approach of managers being able to implement lean irrespective of the actions of others, the pluralist approach sees management as being responsible for shaping the debate and convincing competing interest groups. Certainly in this case it fell to the Process Improvement team to carry out the

convincing in order to ensure the strategy, in its continually adapting form, was completed. The challenge seems to be finding the balance between employee empowerment and involvement and a need to take decisions to steer the business in the right direction.

CONCLUSIONS

In direct response to the business need to eliminate variation in performance the case study company decided to develop a set of tools that can be considered to be a form of standardised work, which is a lean improvement technique. But more than just picking a lean technique from the toolbox and applying it in isolation to achieve a specific business result, the organisation was aiming to enact lean at a philosophical level also, encouraging a change in mindset through the way it went about developing the standardised work. In other words, the strategy to develop the tools was aimed at developing improvement skills and encouraging employee involvement and empowerment. So to what extent can the strategy of developing a set of tools to enable the enactment of lean be considered to have been successful?

A set of tools was produced and a full implementation plan to embed them across the business was completed. There is tangible evidence of improved project performance and a level of consistency and control of projects has been attained. An Executive Board member has given feedback that the improvement in projects completing on time can be attributed to this aspect of the lean strategy. In this sense, the result of the strategy, i.e. implementing the lean technique of standardised work, has proved successful.

While there is the tangible output of the completed tools and their impact, to what extent has this strategy been successful in engendering a lean thinking mindset? Some of those individuals involved feel this strategy has given them the first opportunity to take ownership of their ways of working, and they continue to propose further improvements. However in general, people have returned to their day jobs. Until the improvement process becomes a recognised part of everyone's role, and they are given the skills and coaching to do it, only pockets of a change in mindset will exist.

Perhaps most interesting though is how enactment of the strategy played out in practice compared with what was planned. As discussed in the previous section, precise adherence to the strategy to develop the tools was not achieved. At all stages throughout the development of the tools the strategy was amended and re-developed to make it achievable in practice. So what does this tell us about lean and how its enactment needs to be approached?

Firstly, the day-to-day needs, politics, and pressures of the business mean practice does not conform to theory, and therefore any strategy to enact lean needs to continually respond and evolve to overcome barriers. It is not a case of setting out on a clear path and sticking to it rigidly, but rather accepting that what will happen in practice will be different, with the challenge being to keep reinventing the approach until it works within that organisation. Not only do the current internal and external environments impact on the strategy, but path dependencies also play a part.

Secondly, the business did not attempt to become lean by implementing a set of prescriptive tools and techniques. Instead the business took the theory of standardised work and developed a strategy and version of it to suit its purpose. Similar to another

case study (Carneiro et al., 2009), the principles of lean were developed to suit the internal and external circumstances of the business, recognising that there is no one right way to make decisions and lead the business, but that myriad factors will play a part. The experience of this Company reinforces that there is not a one size fits all solution to lean implementation. Contrast this case study company's approach with that of another which designed a lean and agile construction system for a large mechanical and electrical project (Peter Court, et al., 2008.) In this case one of the objectives of the system was to meet a company objective of being incident and injury free. This determined the way that system was developed and communicated across the project team. Both of these case study companies can be said to have implemented lean, and yet the company business cases, approaches and practices by which that had happened are different.

So what does concluding, "one size does not fit all," mean for those trying to define lean and how it can be implemented? The experiences here support the adaptation theory of the diffusion of lean where local factors and path dependencies play a part in how lean is played out in practice, rather than a diffusion model which suggests elements of lean are universally applicable and can be copied from one place to another regardless of context. (Scarborough & Terry, 1998; Green & May, 2005.) This also highlights the need to discuss lean diffusion in context; doing so in abstraction of context becomes meaningless since context defines everything in terms of what lean becomes.

In this case, the business has not tried to implement a set of lean tools and techniques, and nor has it tried to directly emulate the approach of another. The case study company has made lean fit for its own purpose, responding to its own needs, capabilities and external environment. It has taken a "lean as a philosophy" approach and developed its own strategy for implementation, which it has learned it must continuously adapt in order to meet the ever-changing context in which it is being enacted.

So is lean without definition? On the one hand it is seen as an ambiguous "complex cocktail of ideas including continuous improvement, flattened organisation structures, teamwork, the elimination of waste, efficient use of resources and co-operative supply chain" (Green, 2000, p.2.), and on the other a prescriptive set of universally applicable tools and techniques. Can each company define what lean is, in which case it becomes "good management?" Or is there a set of fundamental guiding principles that can be appropriated and re-shaped in a contingent way? If, as evidenced here, lean implementation needs to be based on adaptation theory, founded on a set a fundamental principles, then lean can only begin to be defined within an organisational context, meaning local factors and path dependencies need to firstly be defined. Lean cannot be defined in abstraction of these conditions.

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